

Service Oriented Architectures and Beyond

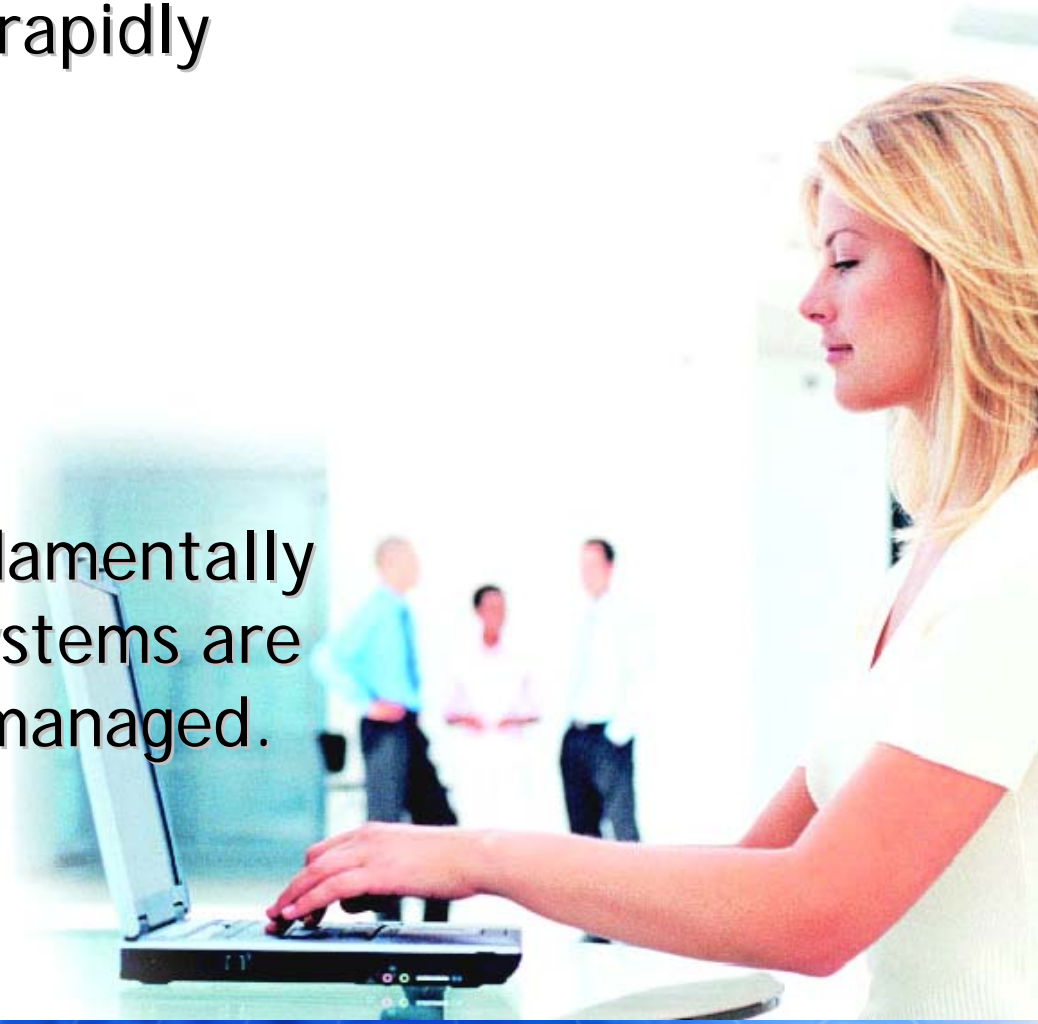
Graham Glass
Chief Technology Officer
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Convergence

- Three major trends are rapidly converging:
 - Web Services
 - P2P
 - Grid Computing
- Together, they will fundamentally improve the way that systems are created, deployed and managed.



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Web Services

■ History

- Leveraged Internet standards for Interoperability
- Misleading name

■ Technology

- Killing CORBA, DCOM, RMI
- Most important thing (after interoperability) is ability to introspect

■ Benefits

- Short-term: Thrifty integration
- Long-term: Web Services Fabric

■ Future

- Catalyst for Service-Oriented Architectures (SOA)
- 3,000,000,000 year precedent



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Service-Oriented Architectures (SOA)

- An SOA is an architecture in which a system is assembled from a loosely coupled collection of services
- A service is a software building block that is well-defined, self-contained, and ideally does not depend on the context or state of other services
 - Services have a published interface
 - Services communicate with each other
 - Services that utilize Web Services standards (WSDL, SOAP, UDDI) are the most popular type of Services available today
- Service-oriented architectures are not new (DCOM, CORBA)
- SOA is not about J2EE, .NET or any other specific platform



The Move Toward Service Oriented Architectures

“By 2006, more than 60 percent of enterprises will consider SOA a guiding principle in designing their new mission-critical business applications and business processes.”

**David McCoy and Yefim Natis,
Gartner
Service-Oriented Architecture:
Mainstream Straight Ahead
April 16, 2003**

“By 2008, SOA will be a prevailing software engineering practice, ending the 40-year domination of monolithic software architecture.”

**Roy Schulte and Yefim Natis,
Gartner
Introduction to Service-Oriented
Architecture
April 14, 2003**

“By 2008, more than 75 percent of then-current application packages either will be natively SOA or will expose SOA interfaces through a wrapping layer of interfaces.”

**Yefim Natis, Gartner
Service-Oriented Architecture
Scenario
April 14, 2003**



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P2P



- What is P2P?
 - Example: emergent wireless network
- Napster -> Gnutella -> FastTrack
- Benefits
 - Scalability, Reliability, Simplicity
- Contrast vs. current UDDI server implementations
- File Sharing is scratching the surface
 - Federated P2P XML Database



Grid Computing

- History
 - Electricity Grids
- Now associated with supercomputing
 - SETI@Home
- Abstract away locality
- Endpoints become simpler
 - More functionality goes into the cloud
- Impact on Application Server Architecture?
- OGSA/Globus
- Services-on-Demand



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Recap

- Web Services
 - interoperability
 - support for introspection
- P2P
 - decentralization
 - spontaneity
 - scalability
- Grid Computing
 - on-demand computing
 - simplification of endpoints, push more into the cloud



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Result

Web Services + P2P + Grid = ESOA
(Enterprise Service-Oriented Architecture)

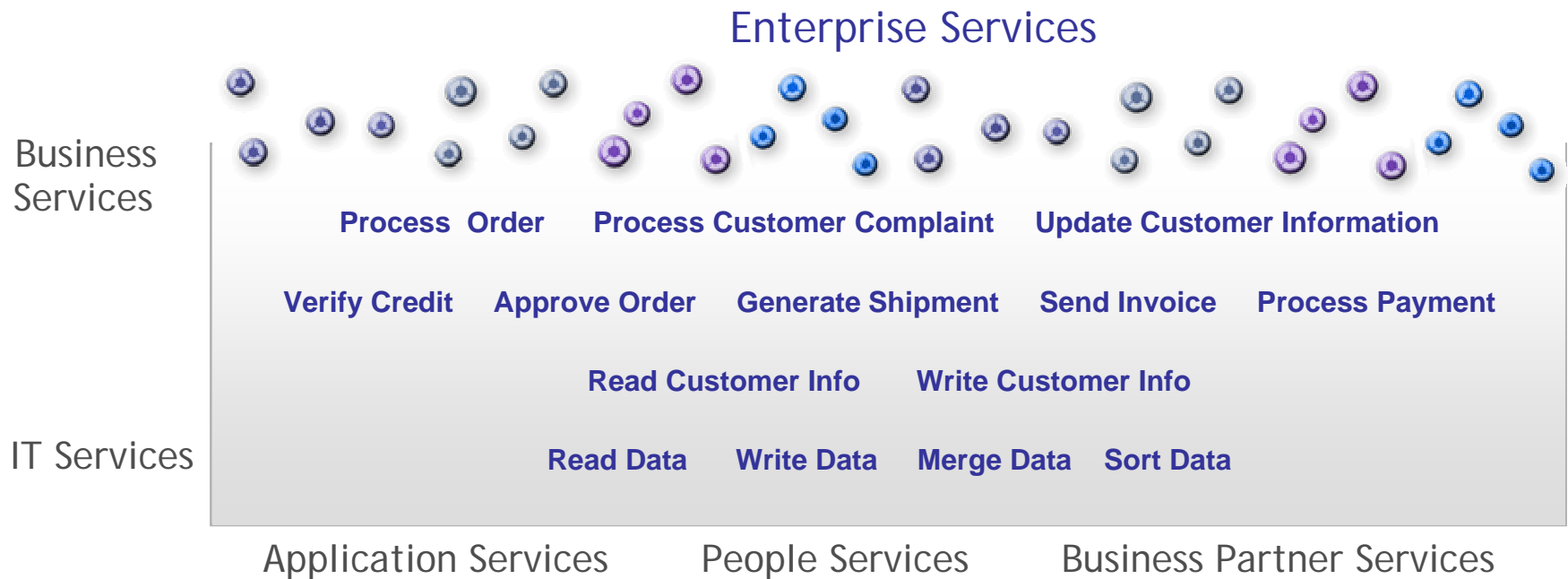


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Enterprise Services

- Services can be IT or business oriented
- Services can be performed by applications, people or business partners
- Services can be atomic or composite

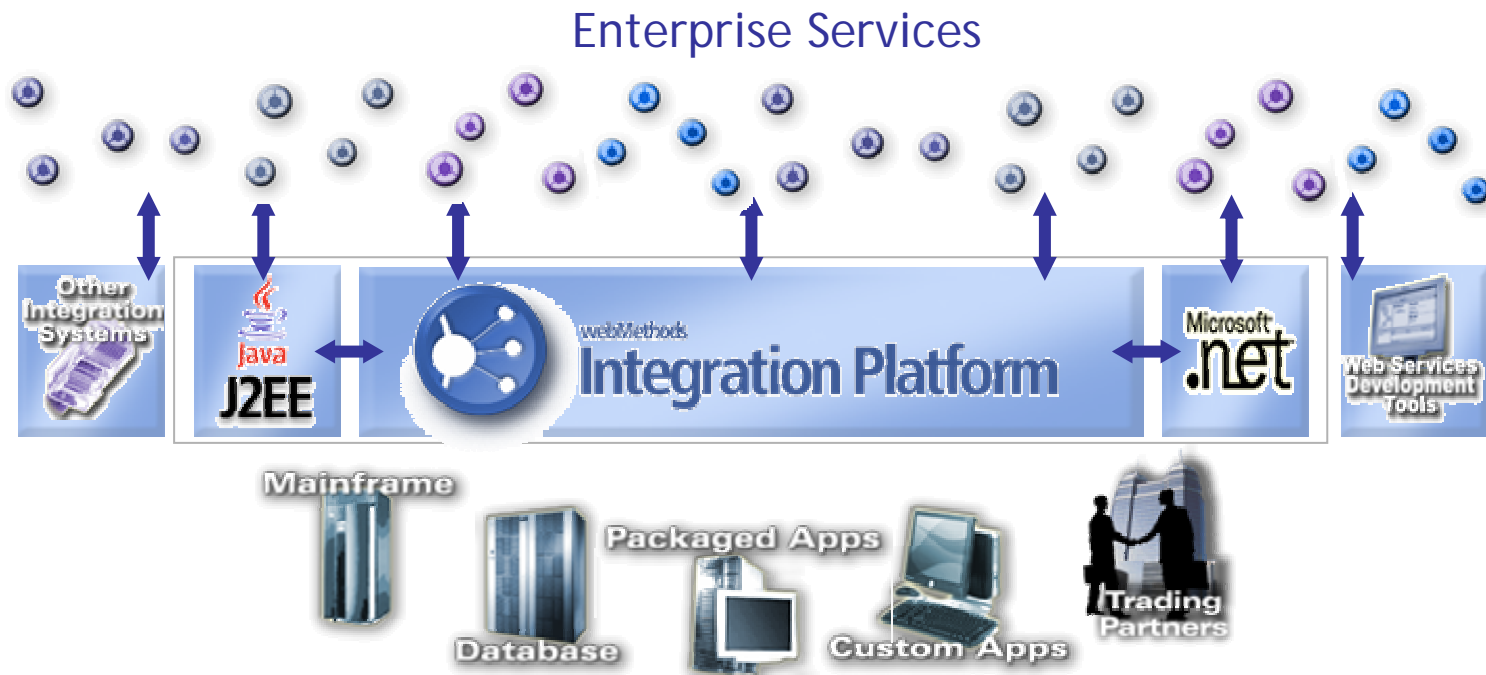


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Web Services Enablement

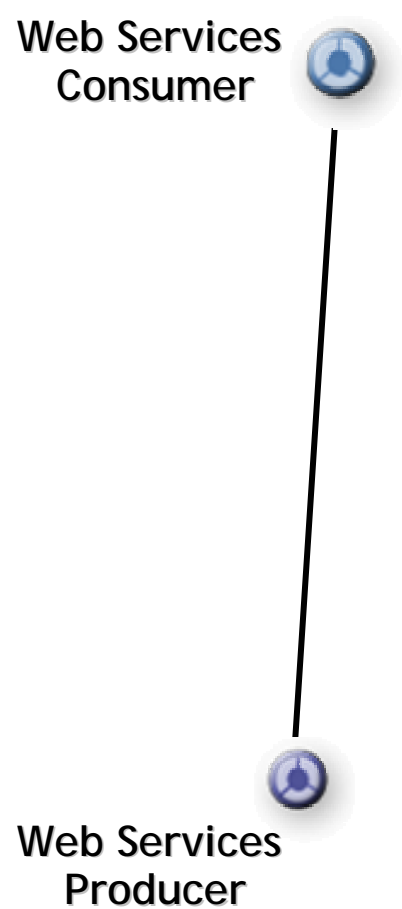
An Integration Platform provides a bridge to leverage all of your IT assets, reaching into functions that otherwise could not be exposed as services.



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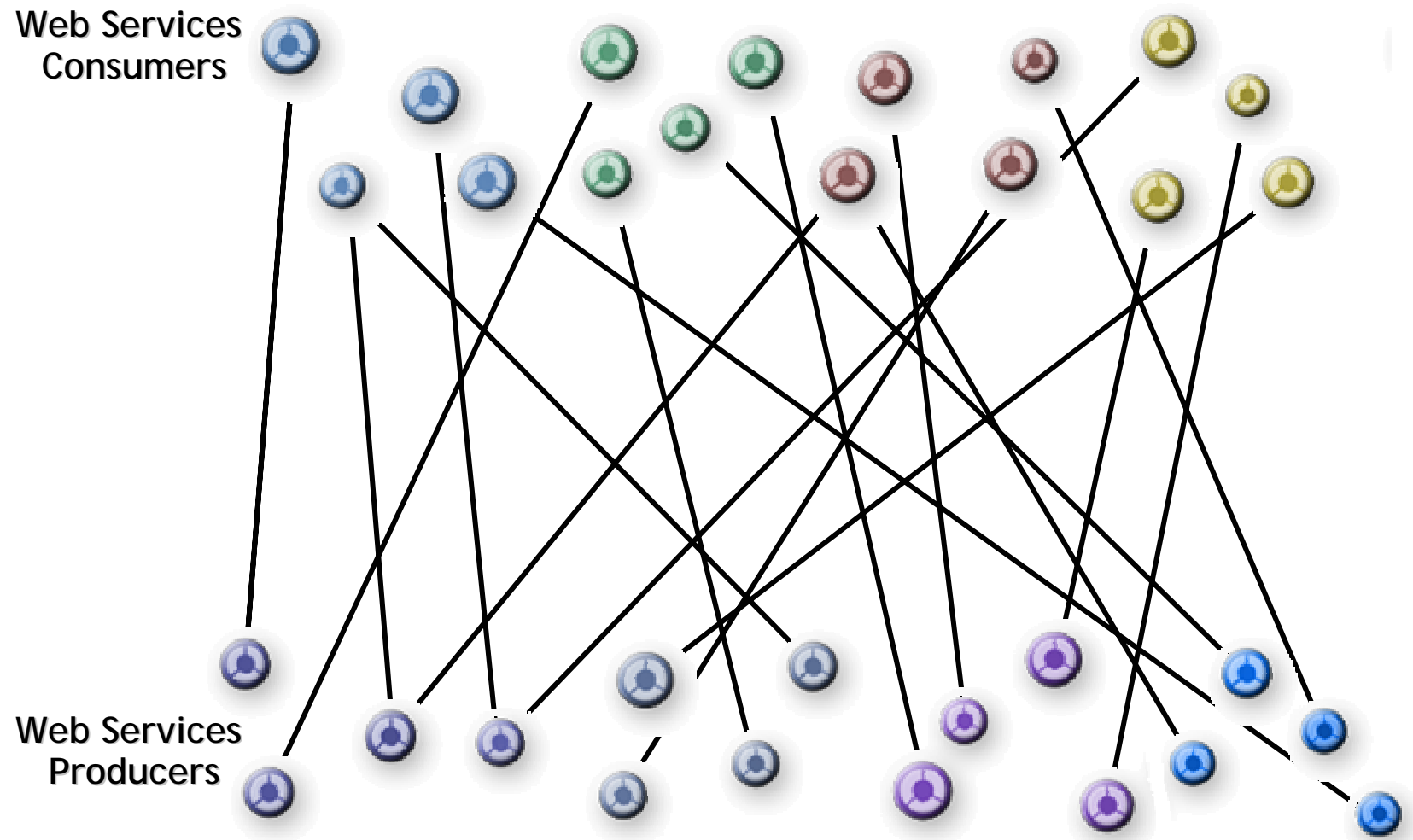
Simple WS connectivity



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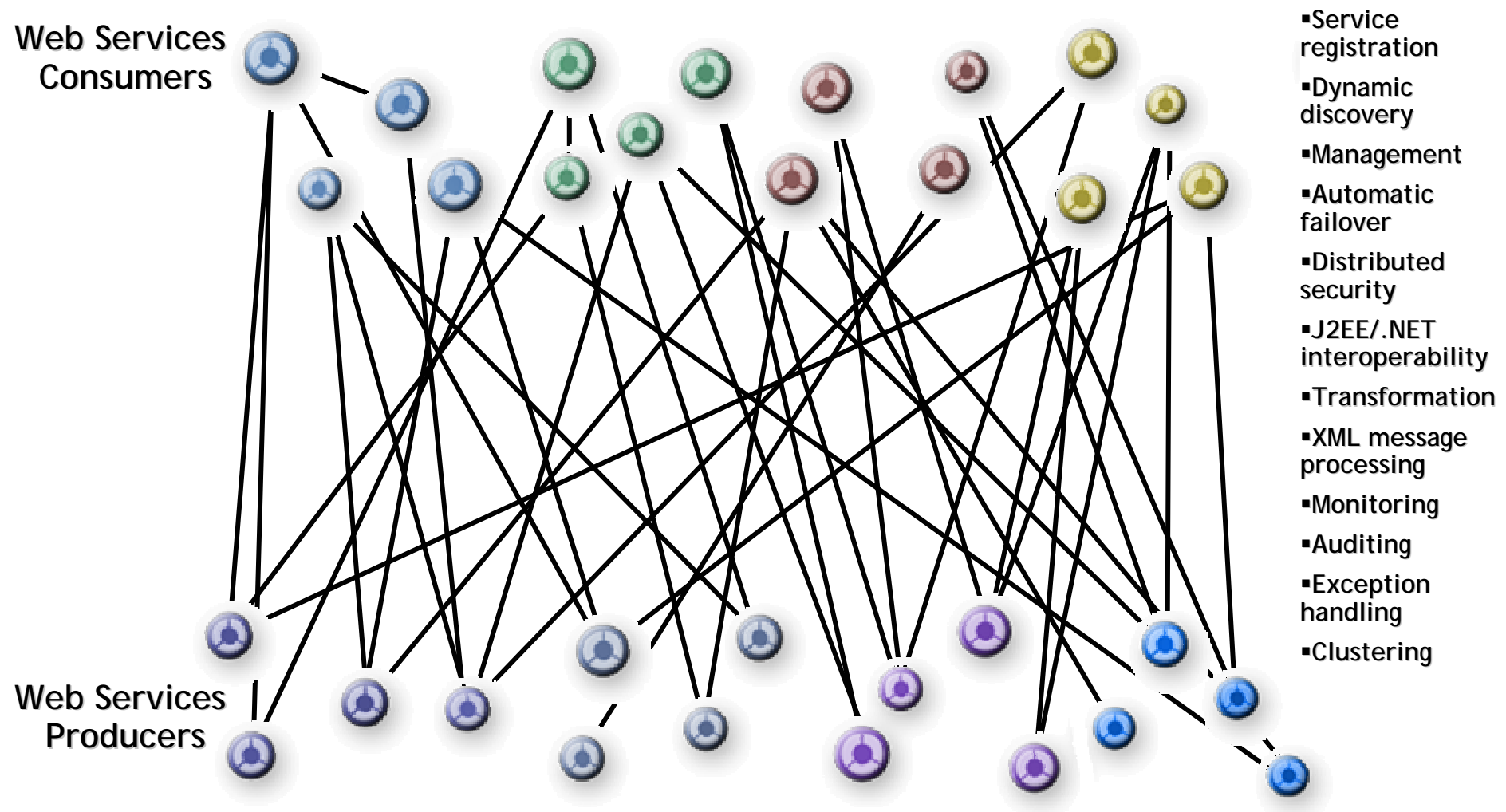
Web services without shared SOA infrastructure



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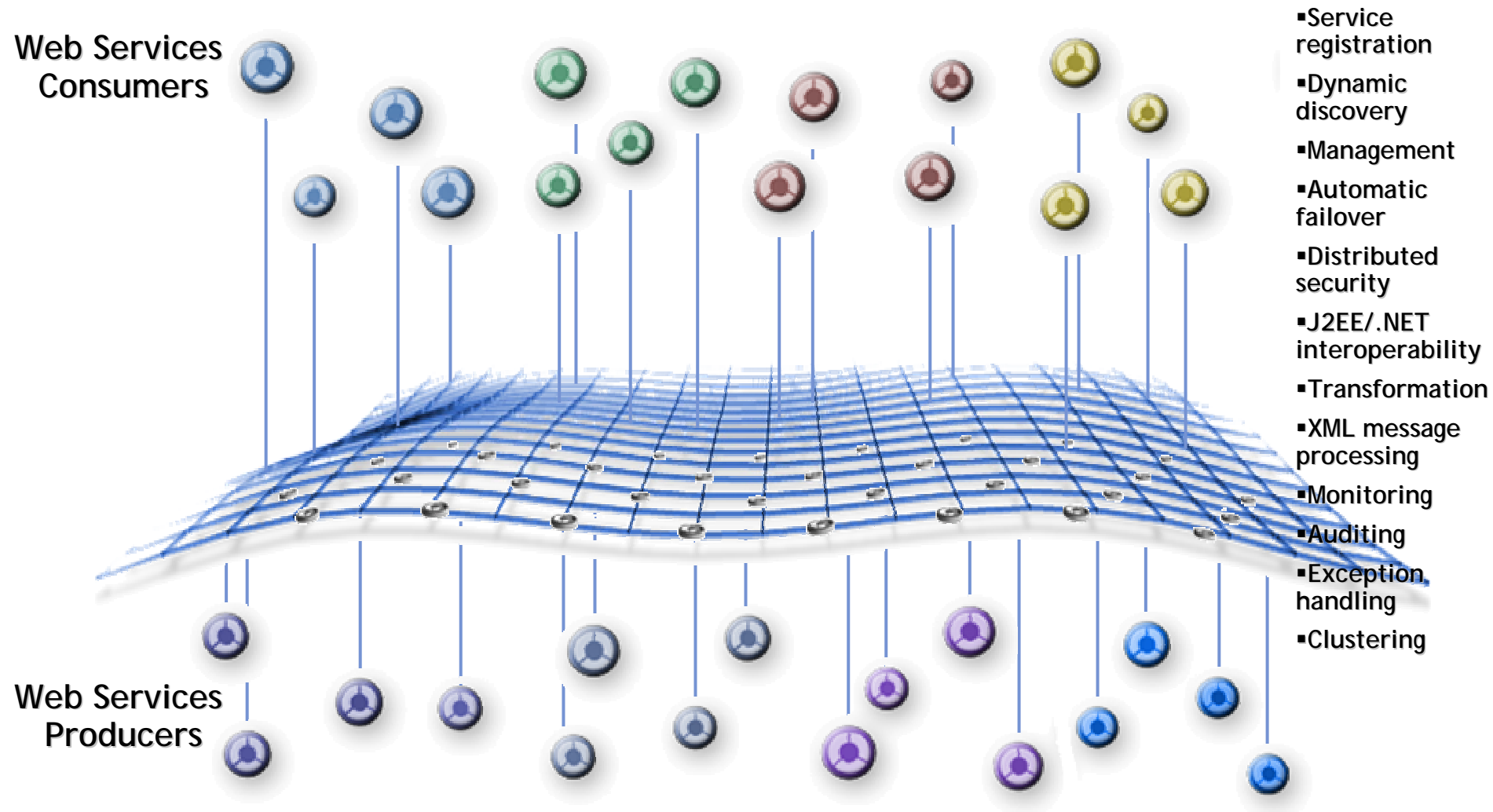
Web services without shared SOA infrastructure



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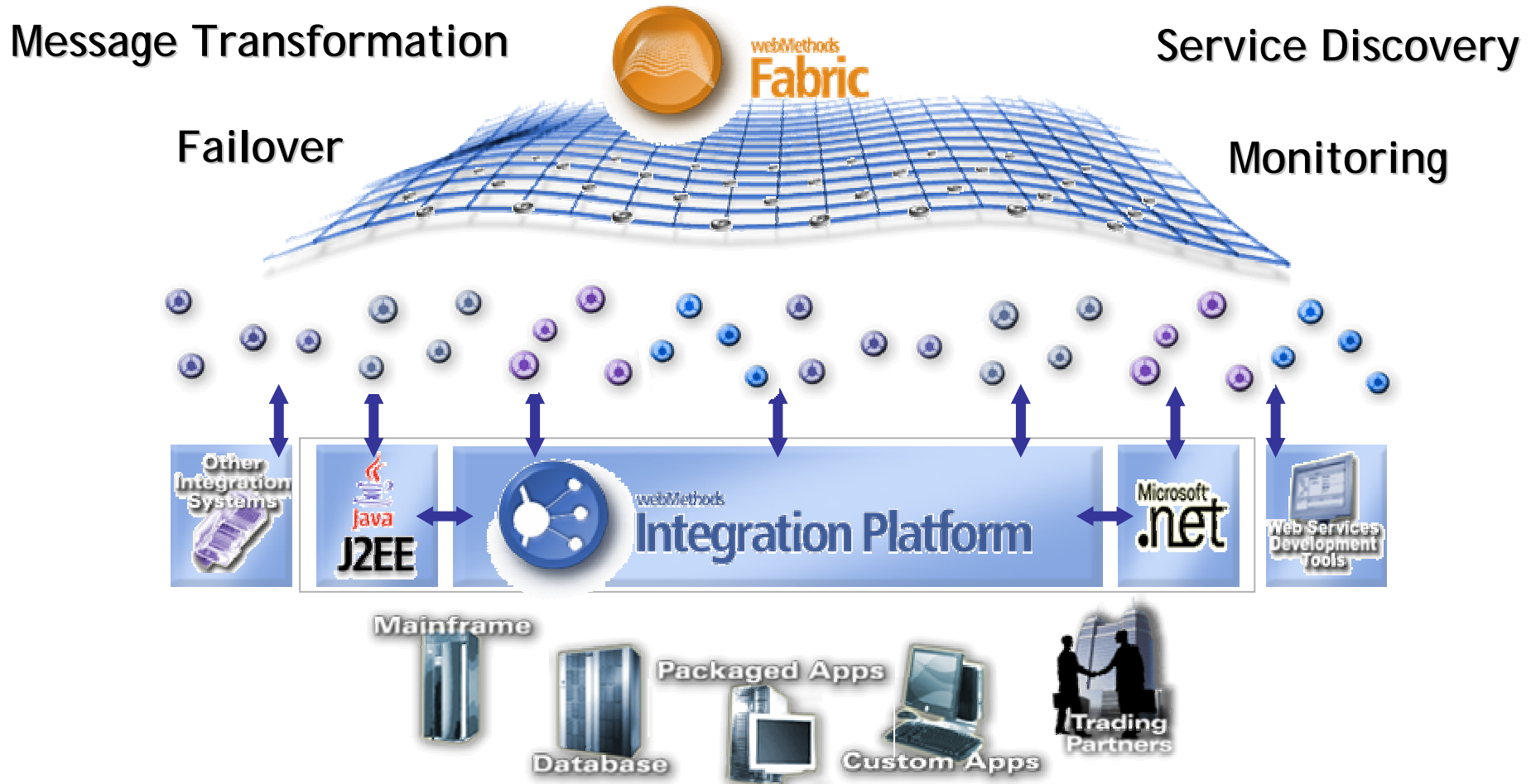
Robust WS integration with a Web Services Fabric



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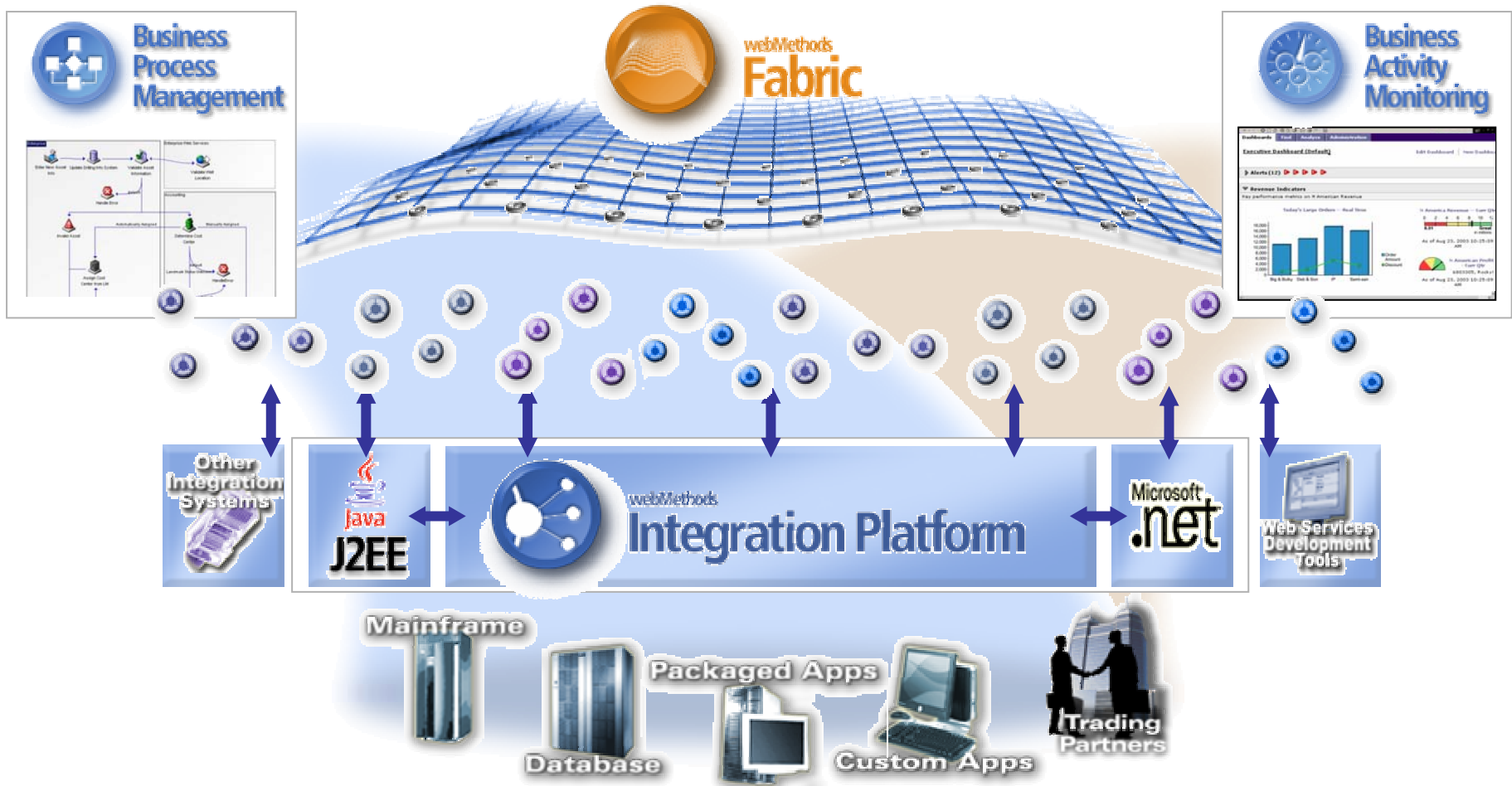
Enterprise Service Oriented Architecture



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A Complete Web Services Infrastructure



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Beyond SOA

- The next big thing will be MDA (Model Driven Architectures)
- This layers nicely on top of an SOA
- MDA captures most of a system at a high level
- MDA implementations will execute the metadata directly
- MDA is the natural evolution of computer programming



Questions?

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